#### (12) INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

## (19) World Intellectual Property Organization International Bureau





### (43) International Publication Date 31 July 2003 (31.07.2003)

#### **PCT**

# (10) International Publication Number WO 03/061636 A2

(51) International Patent Classification<sup>7</sup>: A61K 9/70, C12N 15/89

- (21) International Application Number: PCT/GB03/00282
- (22) International Filing Date: 23 January 2003 (23.01.2003)
- (25) Filing Language:

English

(26) Publication Language:

English

- (30) Priority Data: 0201736.6 25 January 2002 (25.01.2002) GI
- (71) Applicant (for all designated States except US): GLAXO GROUP LIMITED [GB/GB]; Glaxo Wellcome House, Berkeley Avenue, Greenford, Middlesex UB6 0NN (GB).
- (72) Inventor; and
- (75) Inventor/Applicant (for US only): CATCHPOLE, Ian, Richard [GB/GB]; GlaxoSmithKline, Gunnels Wood Road, Stevenage, Hertfordshire SG1 2NY (GB).
- (74) Agent: EASEMAN, Richard, Lewis; GlaxoSmithKline, Corporate Intellectual Property (CN925.1), 980 Great West Road, Brentford, Middlesex TW8 9GS (GB).

- (81) Designated States (national): AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NO, NZ, OM, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW.
- (84) Designated States (regional): ARIPO patent (GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PT, SE, SI, SK, TR), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

#### Published:

 without international search report and to be republished upon receipt of that report

For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.

(54) Title: DNA DOSAGE FORMS

(57) Abstract: The present invention relates to efficient devices for administration of DNA based pharmaceutical agents into mammalian skin. In a particularly preferred aspect of the present invention there is provided devices for administration of DNA vaccines into the skin of the mammal, and preferably into human skin. The present invention provides a microneedle DNA pharmaceutical agent delivery device having at least one skin-piercing element which comprises a support member coated with a solid reservoir medium containing, in solid solution or suspension within it, the DNA pharmaceutical agent, and a stabilising agent that inhibits the degradative effects of free radicals. Preferably the solid pharmaceutical reservoir medium coated onto such devices is a polyol, preferably being a polyol in an amorphous state (such as a glass).

